AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-28 (Canceled)

29. (Currently amended) A hybridization chamber comprising:

a) a base plate comprising a base cavity;

b) a first array component comprising a plurality of assay locations, said first array component being in said base cavity, wherein said assay locations contain a sample solution comprising a plurality of different target analytes having a fluorescent label;

c) a lid comprising a plurality of first component ports, wherein each of said component ports comprises a second array component each second array component comprising a plurality of different bioactive agents, wherein said second array components align with corresponding assay locations of said first array component;

~~[d) a clamp providing increased pressure between said lid and said baseplate;]~~

and

d) ~~[e)]~~ a sealant between said base plate and said lid forming an airtight seal.

30. (Previously presented) The chamber according to claim 29, wherein said first array component is a microtiter plate.

31. (Previously presented) The chamber according to claim 29, wherein said second array component is a fiber optic bundle.

32. (Previously presented) The chamber according to claim 29, 30 or 31, further comprising at least one alignment feature wherein, said at least one alignment feature facilitates alignment of said lid with said base plate.

33. (Previously presented) The chamber according to claim 32, wherein said at least one alignment feature is a male and female fitting.

34. (Previously presented) The chamber according to claim 29, 30 or 31, wherein said chamber is connected to at least one fluid handling device.

35. (Previously presented) The chamber according to claim 32, wherein said chamber is connected to at least one fluid handling device.

36. (Previously presented) The chamber according to claim 32, wherein said second array component comprises:

a) a substrate comprising discrete sites; and

b) a population of microspheres comprising first and second subpopulations distributed on said discrete sites, wherein each subpopulation comprises a distinct bioactive agent.

37. (Currently amended) A hybridization chamber comprising:

a) a base plate comprising a base cavity;

b) a first array component in said base cavity, wherein said first array component comprises a plurality of assay locations, wherein said assay locations contain a sample solution comprising a plurality of different target analytes having a fluorescent label;

c) a lid comprising a plurality of component ports, wherein said component ports comprise a second array component each second array component comprising a plurality of different bioactive agents, wherein each of said second array components is aligned with one of said assay locations;

[~~d) a clamp providing increased pressure between said lid and said baseplate;~~]

and

d) [~~e~~)] a sealant between said base plate and said lid forming an airtight seal.

38. (Currently amended) A hybridization chamber comprising:

a) a base plate comprising a base cavity;

b) a first array component in said base cavity, wherein said first array component comprises a plurality of assay locations, wherein said assay locations contain a sample solution comprising a plurality of different target analytes having a fluorescent label;

c) a lid comprising a plurality of second array components, wherein a plurality of said second array components comprise a plurality of different bioactive agents, wherein a plurality of said second array components are aligned with a corresponding assay location;

[~~d) a clamp providing increased pressure between said lid and said baseplate;~~]

and

d) [~~e~~)] a sealant between said base plate and said lid forming an airtight seal.

39. (Currently amended) A hybridization chamber comprising:

a) a base plate comprising a first array component comprising a plurality of assay locations, wherein said assay locations contain a sample solution comprising a plurality of different target analytes having a fluorescent label;

b) a lid comprising a plurality of second array components, wherein a plurality of said second array components comprise a plurality of different bioactive agents, wherein a plurality of said second array components are aligned with a corresponding assay location;

[~~d) a clamp providing increased pressure between said lid and said baseplate;~~]

and

d) [~~e~~)] a sealant between said base plate and said lid forming an airtight seal.

40. (Currently amended) A hybridization chamber comprising:

a) a first array component comprising a plurality of assay locations, wherein said first array component is a multi-well plate, wherein said assay locations

contain a sample solution comprising a plurality of different target analytes having a fluorescent label;

b) a lid comprising a plurality of second array components wherein a plurality of said second array components comprise an array comprising a plurality of different bioactive agents directly coupled to said second array component, wherein a plurality of said second array components are aligned with a corresponding well of said multi-well plate;

[~~d) a clamp providing increased pressure between said lid and said baseplate;~~]

and

d) [~~c~~)] at least one alignment feature configured to facilitate alignment of said lid with said first array component.

41. (Previously presented) The hybridization chamber according to claim 37, 38, 39 or 40, wherein a plurality of said second array components comprise a plurality of different bioactive agents.

42. (Previously presented) The hybridization chamber according to claim 37, 38, 39 or 40, wherein a plurality of said second array components comprise bioactive agents at a density of about 10,000,000 to 2,000,000,000 bioactive agents per cm^2.

43. (Previously presented) The hybridization chamber according to claim 37, 38, 39 or 40, wherein a plurality of said second array components comprise bioactive agents at a density of about 100,000 to 10,000,000 bioactive agents per cm^2.

44. (Previously presented) The hybridization chamber according to claim 37, 38, 39 or 40, wherein said first array component is a microtiter plate.

45. (Previously presented) The hybridization chamber according to claim 44, wherein said microtiter plate is selected from the group consisting of a 96-well microtiter plate, a 384 well microtiter plate and a 1536 well microtiter plate.

46. (Previously presented) The hybridization chamber according to claim 37, 38, 39 or 40, further comprising at least one alignment feature wherein said at least one alignment feature facilitates alignment of said lid with said base plate.

47. (Previously presented) The hybridization chamber according to claim 46, wherein said at least one alignment feature is a male and female fitting.

48. (Previously presented) The hybridization chamber according to claim 37, 38, 39 or 40, wherein said chamber is connected to at least one fluid handling device.

49. (Previously presented) The hybridization chamber according to claim 37, 38, 39 or 40,wherein at least one of said second array components is a random array comprising:

a) a substrate comprising discrete sites; and

b) a population of microspheres comprising first and second subpopulations distributed on said discrete sites, wherein each subpopulation comprises a distinct bioactive agent.

50. (Previously presented) The hybridization chamber according to claim 37, 38, 39 or 40, wherein at least one of said second array components comprises a substrate comprising discrete sites and a plurality of bioactive agents attached to said substrate at said discrete sites.

51. (Previously presented) The hybridization chamber according to claim 37, 38, 39 or 40, wherein at least one of said bioactive agents is selected from the group consisting of peptides and nucleic acids.

52. (Previously presented) The hybridization chamber according to claim 29, 37, 38, 39 or 40, further comprising a heating apparatus placed to maintain an elevated temperature for said hybridization chamber.

53. (Canceled).

54. (Canceled).

55. (Currently amended) The hybridization chamber according to claim 29, 37, 38, 39 or 40 [~~54~~], wherein a plurality of said different bioactive agents are bound to a plurality of different target analytes having said fluorescent label.

56. (Currently amended) The hybridization chamber according to claim 37, 38, 39 or 40, wherein said second [~~first~~] array component is not a fiber optic array.

57. (New) The hybridization chamber according to claim 29, 37, 38, 39 or 40, further comprising a clamp providing increased pressure between said lid and said baseplate.